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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/666,478 | 09/19/2003 | Wolfgang Schmid | 5367-41 | 8862 |

7590

07/13/2005

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| EXAMINER |
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NGUYEN, PHILLIP

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| ART UNIT | PAPER NUMBER |
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2828

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/666,478

Applicant(s)

SCHMID ET AL.

Examiner

Phillip Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>9/19/03</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites “the active layer (16) of the pump laser (5) and/or the active layer (13)” which is lack of antecedent basis.

Claims 10 and 15 recite “formed jointly in one epitaxy step” which is not clear whether the claims are method or apparatus. Since they depend on the apparatus claims, examiner assumes they both are apparatus claims.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an

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international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

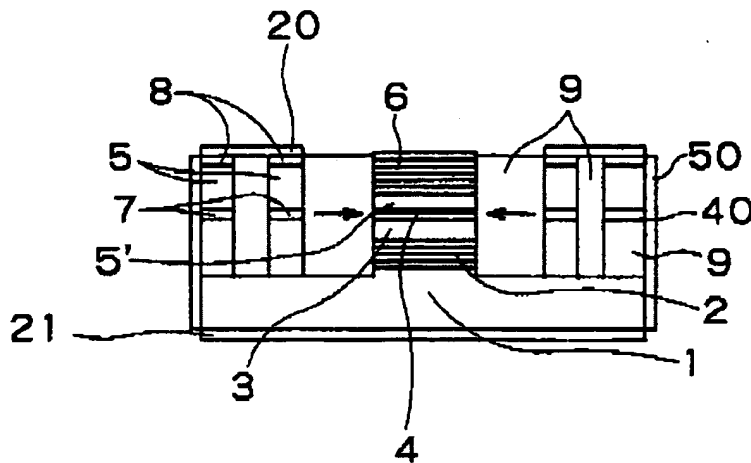


FIG. 1B

Claims 1-4 and 6-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Kinoshita ('537).

With respect to claim 1, Kinoshita discloses in Fig. 1B a semiconductor laser apparatus having a vertical emitter (1-6) and having at least one pump laser (on the sides) for optically pumping the vertical emitter with the vertical emitter and the pump laser being monolithically integrated. It is inherent that a radiation emitting zone of the pump laser produces less heat /lower temperature than that of the vertical emitter because the vertical emitter provide more powerful laser beam than that of the pump laser.

With respect to claim 2, Kinoshita discloses both pump laser and vertical emitter are grown on a common substrate 1.

With respect to claims 3, Kinoshita discloses the pump laser and the vertical emitter being mounted on a common mount 21 which could be a heat sink.

With respect to claims 4, since the distances between the mount to both active layers of the pump laser and vertical emitter are the same, the thermal resistances depend on the material between the active layers and the common mount. In this case, the material between the vertical emitter includes Bragg reflectors 2 and cladding layer 3. The material between the layer 7 and 21 includes insulating material 9 which has thermal resistance less than the Bragg reflectors and cladding.

With respect to claims 6 and 7, Kinoshita discloses the one or two or more mirror layers 2 are arranged between radiation-emitting zone (upward) and the mount 21 wherein the mirror layers are Bragg mirror.

With respect to claim 8, Kinoshita discloses pump laser has an active layer 7, comprising active zone and the vertical emitter has an active layer 4 comprising its active zone with active layer of the pump laser and active layer of the vertical emitter having the same structure as shown in Fig. 1B.

With respect to claims 9 and 14, Kinoshita also discloses “the active layer” of the pump laser and/or “the active layer” of the vertical emitter are/is formed as quantum well structure (col. 1, lines 29-31 and col. 4, line 53).

With respect to claims 10 and 15, Kinoshita discloses the active layers of both pump laser and vertical emitter are formed jointly.

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With respect to claims 11 and 16, Kinoshita discloses the radiation-emitting zone (as shown by the arrows) which is perpendicular to the direction of the main emission of the vertical emitter (for this case, it is upward direction).

With respect to claims 12 and 17, since the pump laser is formed on the edge and produces laser from its edge (shown by arrows), it is formed as an edge emitter.

With respect to claims 13 and 18, Kinoshita discloses the vertical emitter is formed as VCSEL (see the entire reference).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita ('537) in view of Martinsen (539). Kinoshita discloses the claimed invention except for the pump laser and vertical emitter being arranged between the substrate and the mount. Martinsen discloses in Fig. 1 a laser device including a vertical emitter being arranged between a substrate 11 and a mount 23 (heat sink). For the improvement of the laser device, it would have been obvious to the one having ordinary skill in the art at the time the invention was made to arrange the pump laser and the vertical emitter disclosed by Kinoshita between the substrate and the mount as

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taught by Martinsen in order to obtain a lower thermal resistance between the vertical emitter and the heat sink.

Citation of Pertinent References

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The patent to Kinoshita discloses Optical Amplification and Light Emitting Element, U.S. Patent No. 6535537

The patent to Martinsen discloses Method and Apparatus for Controlling the Thermal Variations in an Optical Device, U.S. Patent No. 6636539

Communication Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phillip Nguyen whose telephone number is 571-272-1947. The examiner can normally be reached on 9:00 AM - 6:00 PM.

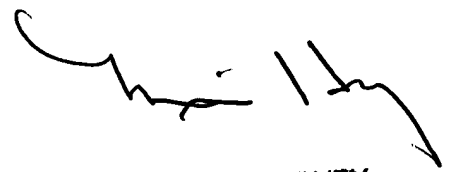
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MINSUN HARVEY, can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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MINSUN CHAE
PRIMARY EXAMINER